



The rediscovery of *Brachystelma volubile* (Apocynaceae – Asclepiadoideae)

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Abstract

Brachystelma volubile Hook.f. (Apocynaceae – Asclepiadoideae) has been rediscovered from near the type locality in the Kadapa district of Andhra Pradesh, after a lapse of about 130 years. A detailed description with illustrations is provided. Its current threat status has also been assessed according to the IUCN guide lines.

Keywords: Apocynaceae, Asclepiadoideae – Ceropegieae, *Brachystelma volubile*, Endemic, Southern India

Introduction

The genus *Brachystelma* R. Br. belongs to the Ceropegieae of the subfamily Asclepiadoideae (Apocynaceae) and has 100 – 200 species (Meve, 2002; Mabberley, 2008; Bruyns, 2009). These species are chiefly distributed in southern Africa with a few species in Southeast Asia and Australia (Forster, 1996). In India, 17 species are known to occur (Karthikeyan *et al.*, 2009). In addition, a new species, *Brachystelma pullaiahii* was described recently from Andhra Pradesh (Rao *et al.*, 2011). Of these 18 species, 10 are endemic to India.

Between 2004 and 2011, botanical explorations were conducted in the Anantapur and Kadapa districts of Andhra Pradesh, to assess the threat status of various endemic Asclepiads. This study resulted in the rediscovery of *B. volubile* Hook.f. However, during five years of intense exploration only one population with about 10 mature individuals was located near Batrepalle village in Nigidi Reserve Forest at an altitude of 705 m. Nigidi Reserve Forest was previously in the Kadapa district and is now included in the Anantapur district.

Hooker (1883) described *B. volubile* based on a specimen without fruits and tubers, collected by R.H. Beddome during 1881 from Cuddapah (now Kadapa) hills at 2000 ft and housed at K. After Beddome's collection, this species has not been collected from the type locality, or from anywhere else. Hence, the present collections represent the rediscovery of this species after a lapse of about 130 years from its type locality. The species was listed in Flora of Karnataka by Sharma *et al.* (1984).

But no specimens could be traced in any national and local herbaria in Karnataka and elsewhere in India.

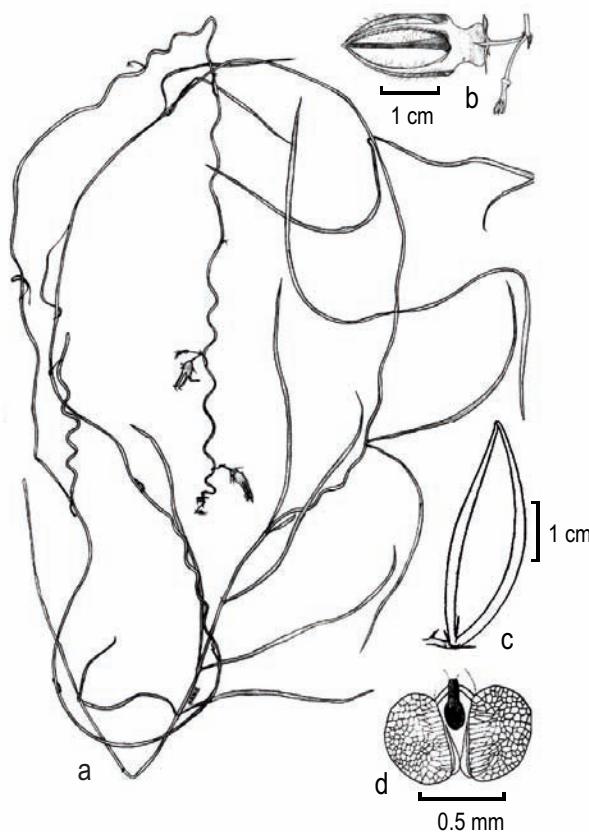
Brachystelma volubile Hook.f. resembles *B. brevitubulatum* Bedd. morphologically but differs in many characters (Table 1). In many Indian Floras and monographs *B. volubile* was included based on early literature (Jagtap & Singh, 1999; Karthikeyan *et al.*, 2009). The present report provides a detailed description and illustrations (Fig. 1, 2) and photographs of *B. volubile* for the first time.

Brachystelma volubile Hook.f., Fl. Brit. India 4: 65. 1883; Gamble, Fl. Madras: 852. 1924; Jagtap & N.P. Singh, Fasc. Fl. India 24: 190. 1999.

Climbers, herbaceous, branched, glabrous, from 1 or 2 subterranean tubers; tubers discoid, 10 – 25 × 20 – 33 mm. Leaves linear-lanceolate, 5 – 16 × 0.2 – 0.5 cm, narrowed into 3 – 5 mm long petiole, acuminate at apex, rough-hairy above, hirsute only on midrib and margins below, caducous. Inflorescences a cyme, extra-axillary, 2 or 3-flowered; peduncles 5 – 7 mm long; bracts 2, lanceolate, 3 – 4 mm long; pedicels c. 10 mm long, purplish green. Calyx lobes lanceolate, 9 – 10 mm long, glabrous, purplish green. Corolla 35 – 37 mm across, densely covered with fine white hairs on lobes inside and mouth of tube, glabrous outside; tube 9 – 12 mm long, glabrous, dark red-brown on lobes with few irregular transverse light yellow bars near bases of lobes and irregular vertical, purple striations in tube on pale yellow background inside, greyish

Table 1. Differences between *Brachystelma volubile* Hook.f. and *B. brevitubulatum* Bedd.

Characters	<i>B. volubile</i>	<i>B. brevitubulatum</i>
Habit	1.5 m high	2.5 m high
Petiole	0.3 – 0.5 cm long, scabrous	2 – 3 cm long, ciliate
Leaves	6 – 16 × 0.2 – 0.5 cm	7.5 – 20 × 0.5 – 1.2 cm
Cymes	2 or 3-flowered	1-flowered
Peduncle	0.5 – 0.7 cm long, glabrous	to 6 cm long, ciliate
Pedicel	Glabrous	Ciliate
Calyx	Shorter than the corolla tube, glabrous	Longer than the corolla tube, scabrous
Corolla tube	Urceolate, longer than calyx, green with purple tinge outside and same in inside with purple straight lines	Obovate, shorter than calyx, greenish yellow outside
Corolla lobe	Cohering at apex only when young, green with purple tinge outside, pubescent and dark purple inside, ciliate at margins with c. 2 mm long white hairs	Cohering at apex all through, glabrous, greenish yellow outside
Follicle	Connate at apex	Not connate at apex

**Fig. 1.** *Brachystelma volubile* Hook.f.: a. Habit; b. Flower; c. Fruit; d. Pollinaria

green with purple tinge outside; lobes linear, c. 26 × 3 mm, long-hairy at margins (hairs c. 2 mm long), acuminate at apex, connate at apex when young and free when mature. Corona c. 2 mm high, c. 4 mm in diam.; outer corona cupular, purple, 5-lobed; each lobe slightly bifid, c. 2 mm across, pubescent; inner corona dorsiventrally flattened, c. 1 mm long, pressed to the backs of the anthers and slightly shorter than them, yellow. Follicles in pairs, slightly fusiform, 55 – 75 × 2.5 – 4 mm, tapering and sometimes remaining connate at apex, slender, smooth, glabrous, pale green; seeds flattened, comose, brown.

Flowering & Fruiting: November – December.

Local Name: Colanimmata (Telugu)

Ecology: This species is so far confined to Batreppalli in the Nigidi Reserve Forest, Anantapur district in Andhra Pradesh. The area lies between 14°13'34.7" N and 78°12'12.8" E, and situated at an altitude of 705 m. The habitat is prone to destruction because of extraction of *Cymbopogon coloratus* for thatching and also due to forest fires. It inhabits open, dry, deciduous forest in steep slopes with gravelly red soil with low annual rainfall (c. 540 mm) among *C. coloratus* and other grasses. The species perenniates by means of underground tubers which sprout in June with the onset of monsoon. Flowering and fruiting occurs between October and November. It is locally rare and has been found in only one

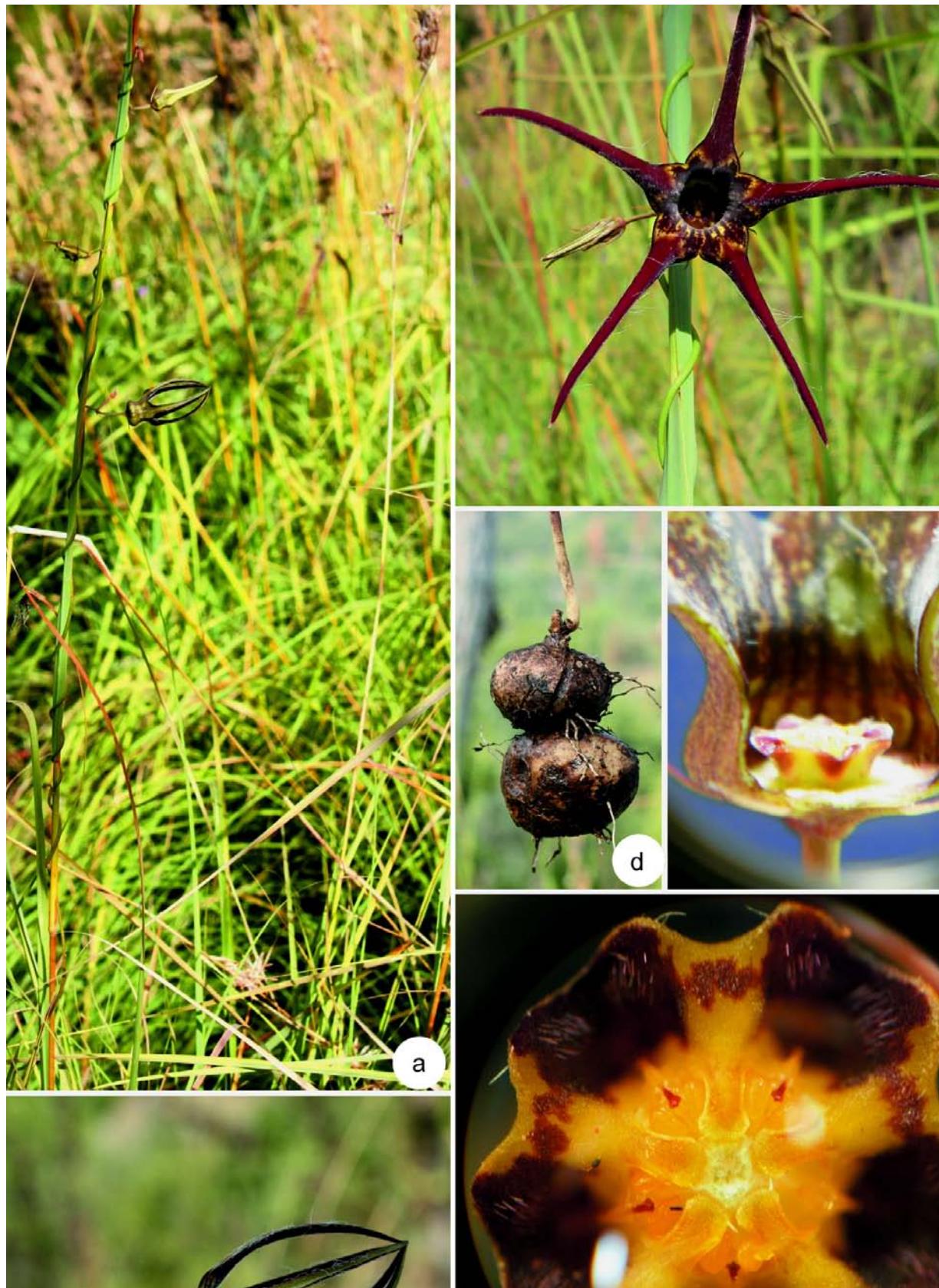


Fig. 2. *Brachystelma volubile* Hook. f.: a. Habitat; b. Flower at young stage; C. Flower at mature stage front view; d. Tubers; e. Flower L.S.; f. Corona.

locality in the forest area within a radius of about 10 km. About 10 mature individuals were noticed so far at this locality. The tubers are eaten by local people.

Specimens examined: INDIA, Andhra Pradesh, Cuddapah hills, 2000', Beddome 1981 (K, Holotype); Anantapur district, Batrepalli, Nigidi Reserve Forest, 700 m, 22.11.2011, Rajakullayiswamy 41853A (SKU) & 41853B (MH).

IUCN Threat Status: The current assessment as per the IUCN guidelines (2001) indicates that this species is "Critically Endangered" [CR - B2abiii,v; D] based on the extent of occurrence, severely fragmented population, quality of habitat and declining number of mature individuals. Being a steno-endemic species with very few individuals and increasing possibility of habitat destruction in the place of its occurrence, it needs urgent conservation attention.

Acknowledgements

Authors are grateful to Dr. Ulrich Meve, Germany, for his comments and suggestion and to Dr. V. Sampath Kumar, IBLO, Kew, for literature. They also thank the authorities of Kew, for the image of holotype. The project is funded by Board of Research in Nuclear Sciences, Government of India (vide their sanction letter No. 2008/36/34-BRNS).

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Received: 21.2.2012

Revised and Accepted: 3.12.2012